A Study On Cadastral Coordinate Transformation Using Genetic Algorithm based Least Square Support Vector Machine

Chun-Yi Huang
Graduate Student ,Department of Land Economic,
National Chengchi University,Taiwan
64, Section 2, Chihnan Road, Taipei 116, Taiwan
E-mail: 101257033@nccu.edu.tw

Lao-Sheng Lin
Associate Professor ,Department of Land Economic,
National Chengchi University,Taiwan
64, Section 2, Chihnan Road, Taipei 116, Taiwan
Email: lslin@nccu.edu.tw

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Abstract：There are two coordinate systems with different geodetic datum in Taiwan region, i.e., TWD67 (Taiwan Datum 1967) and TWD97 (Taiwan Datum 1997). In order to maintain the consistency of cadastral coordinates, it is necessary to transform one coordinate system to another. There are many coordinate transformation methods, such as, 2-dimension affine transformation,and support vector machine (SVM). Least Square Support Vector Machine (LSSVM), is one type of SVM algorithms. LSSVM has been successfully applied to the fields of image classification, and statistical regression. The goal of this paper is to apply LSSVM with different kernel functions(POLY、LIN、RBF) to cadastral coordinate transformation between TWD67 and TWD97. Genetic Algorithms will be used to find out a appropriate set of system parameters for LSSVM to transform the cadastral coordinate .The simulated and real test datas will be used to test the performance and transformation accuracy of LSSVM.

Accroding to the test results,it is found that by using genetic algorithms to optimize the system parameters , transformation accuracy of LSSVM is even better then transformation accuracy of 6-parameter Transformation